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EXAMINER

LOGIE, MICHAEL J

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary

Application No.

10/541,551

Applicant(s)

MOTOI, TAIKO

Examiner

Michael J. Logie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/06/2005 and 05/22/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, *as* being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Lines 6-7 recite "a probe" and line 8 recites "a probe" is vague and unclear. Is a probe the same probe as a probe?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomimatsu et al. (U.S. patent no. 6,538,254) and further in view of Hironori (JP pub. no. 2004-286696).

In regards to claim 1, Tomimatsu et al. teach an apparatus for conveying a specimen (col. 10, lines 60-66) comprising a probe (fig. 1, 11) for conveying a specimen to be observed (col. 11, lines 39-45).

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Tomimatasu et al. differ from the claimed invention by not disclosing temperature control means for controlling a temperature of said probe whereby said sample does not change during conveyance.

Hironori teaches a temperature control means (fig. 1, 45) for controlling a temperature of a probe (fig. 1, 20) whereby a sample does not change during conveyance ([0008], lines 4-11).

Since both Hironori and Tomimatasu et al. teach a probe for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

In regards to claim 15, Tomimatasu et al. teach a conveying apparatus comprising: a conveying member for conveying a sample for observation under an electron microscope (col. 10, lines 60-66).

Tomimatasu et al. differ from the claimed invention by not disclosing a temperature control means which regulates a temperature of said conveying member; wherein said temperature control means regulates the temperature of said sample in such a manner that it does not change before and after the conveyance.

Hironori teaches a temperature control means (fig. 1, 45) which regulates a temperature of said conveying member (fig. 1, 20); wherein said temperature control means regulates the temperature of said sample in such a manner that it does not change before and after the conveyance ([0008], lines 4-11).

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Since both Hironori and Tomimatasu et al. teach a probe for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomimatasu et al. (U.S. patent no. 6,538,254), and further in view of Shigeo et al. (JP pub. no. 09-306405).

In regards to claim 2, Tomimatasu et al. teach a specimen-obtaining apparatus (fig. 1) comprising a stage for supporting a sample (fig. 1, 3); means for isolating a part of said sample (col. 11, lines 44-45); probe moving means for mounting and moving a probe (fig. 1, 4); a probe for obtaining (assuming a probe is the same as a probe) a part of a sample isolated by said isolation means (fig. 1, 11); and a second temperature control means for controlling a temperature of said probe (col. 18, lines 61-65).

Tomimatasu et al. differ from the claimed invention by not disclosing first temperature control means, which regulates a temperature of said sample.

Shigeo et al. teach a first temperature control means (fig. 5, 29) which regulates a temperature of said sample ([0014], lines 15-17).

Since both Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Shigeo et al. in the device of Tomimatasu et al. because the temperature

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control means provides an effective means to control the temperature of the sample, while effectively using the coolant.

Claims 3-8 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomimatasu et al. (U.S. patent no. 6,538,254), and further in view of Shigeo et al. (JP pub. no. 09-306405), Hironori (JP pub. no. 2004-286696) and Toshihiro et al. (JP pub. no. 05-028946).

In regards to claim 3, Tomimatasu et al. teach a sample processing apparatus (fig. 1) comprising: a stage for supporting a sample (fig. 1, 3); ion beam generation means for irradiating said sample with an ion beam (fig. 1, 9); detection means for detecting a signal from said sample in response to the irradiation of said ion beam (col. 11, lines 26-39); a probe for obtaining a part of the sample processed by the irradiation of said ion beam (fig.1, 11, col. 11, lines 39-49); a sample table for evaluation (fig. 1, 3, col. 11, lines 52-57, detecting changes in electrical resistance is a form of evaluation).

Tomimatasu et al. differ from the claimed invention by not disclosing first temperature control means for controlling a temperature of said sample.

Shigeo et al. teach a first temperature control means (fig. 5, 29) which regulates a temperature of said sample ([0014], lines 15-17).

Since both Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Shigeo et al. in the device of Tomimatasu et al. because the temperature

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control means provides an effective means to control the temperature of the sample, while effectively using the coolant.

The combined invention of Tomimatasu et al. and Shigeo et al. differ from the claimed invention by not disclosing second temperature control means for controlling a temperature of said probe.

Hironori teaches a second temperature control means (fig. 1, 45) for controlling a temperature of a probe (fig. 1, 20).

Since both Hironori and the combined invention of Tomimatasu et al. and Shigeo et al. teach a probe for observing a sample, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

The combined invention of Tomimatasu et al., Shigeo et al. and Hironori differ from the claimed invention by not disclosing a third temperature control means for controlling a temperature of said sample table.

Toshihiro et al. teach a third temperature control means for controlling a temperature of said sample table ([0012], lines 1-6).

Since both Toshihiro et al. and the combined invention of Tomimatasu et al., Shigeo et al. and Hironori teach a sample for observing and temperature control means, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because it provides better temperature control of the sample through plate temperature regulation.

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In regards to claim 4, Tomimatasu et al. teaches the ion beam generated by said ion beam generation means is used to expose a face to be acquired (col. 10, lines 41-46) and said detection means is used to acquire information (col. 11, lines 26-44) and section and attachment of the sample are carried out (col. 11, lines 39-49).

Tomimatasu et al. differ from the claimed invention by not teaching under conditions that the temperature of said sample is regulated to a predetermined temperature by said first temperature control means and section and attachment of the sample are carried out in a state where the temperature of said sample is adjusted to a predetermined temperature by said first temperature control means.

Shigeo et al. teach under conditions that the temperature of said sample is regulated to a predetermined temperature ([0014], lines 5-8, setting control of the temperature is regulating sample to a predetermined temperature) by said first temperature control means ([0014], lines 15-17) and section and attachment of the sample are carried out in a state where the temperature of said sample is adjusted to a predetermined temperature by said first temperature control means ([0014], lines 8-17).

Since both Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Shigeo et al. in the device of Tomimatasu et al. because the temperature control means provides an effective means to control the temperature of the sample, while effectively using the coolant.

The combined invention of Shigeo et al. and Tomimatasu et al. differ from the claimed invention by not disclosing section and attachment of said probe is carried out

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in a state where the temperature of said sample is adjusted to a predetermined temperature by said second temperature control means.

Hironori teaches section and attachment of said probe is carried out in a state where the temperature of said sample is adjusted to a predetermined temperature by said second temperature control means ([0008], lines 4-11).

Since both Hironori and the combined invention of Tomimatasu et al. and Shigeo et al. teach a probe for observing a sample, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

In regards to claim 5, Tomimatasu et al. differ from the claimed invention by not disclosing said first temperature control means is provided with cooling means for cooling said sample to a temperature equal to or lower than room temperature.

Shigeo et al. teach first temperature control means is provided with cooling means for cooling said sample to a temperature lower than room temperature ([0004], lines 1-5, liquid helium is lower than room temperature).

Since Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Shigeo et al. in the device of Tomimatasu et al. because it allows effective observation of a sample at low temperatures.

The combined invention of Shigeo et al. and Tomimatasu et al. differ from the claimed invention by not disclosing said second temperature control means are

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provided with cooling means for cooling said sample to a temperature equal to or lower than room temperature.

Hironori teaches second temperature control means are provided with cooling means for cooling said sample to a temperature equal to or lower than room temperature ([0009], lines 8-11, since the probe is regulated to the temperature of the sample, it is obvious that since the sample is kept equal or lower than room temperature the probe will maintain that temperature via temperature controller to reduce temperature drift).

Since both Hironori and the combined invention of Tomimatasu et al. and Shigeo et al. teach a probe for observing a sample, it would be obvious to one of ordinary skill in the art to combine the temperature control means of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

In regards to claim 6, Tomimatasu et al. teach wherein said stage, said ion beam generation means, said detection means, said probe and said sample table are provided in a chamber with a controllable atmosphere (fig. 1, 77), and said apparatus further comprises trap means for trapping a gas remaining in said chamber (fig. 1, 8).

In regards to claim 7, Tomimatasu et al. teach a sample stage enabling moving or inclining of the sample fixed thereon (col. 10, lines 26-36); a probe stage having a movable tip (col. 10, lines 60-61); a sample table for evaluation (fig. 1, 3, col. 11, lines 52-57, detecting changes in electrical resistance is a form of evaluation).

Tomimatasu et al. differ from the claimed invention by not disclosing wherein said first temperature control means includes a temperature-varying system in a portion onto which said sample is fixed; and the apparatus further includes: first temperature detection means which is mounted in a part of said temperature-varying system to detect the temperature in the vicinity of the sample fixed to said temperature-varying system; and temperature control means for controlling temperature of said temperature-varying system on the basis of the temperature detected by said first temperature detection means, thereby maintaining said sample at a predetermined temperature.

Shigeo et al. teach wherein said first temperature control means includes a temperature-varying system in a portion onto which said sample is fixed (fig. 5); and the apparatus further includes: first temperature detection means which is mounted in a part of said temperature-varying system to detect the temperature in the vicinity of the sample fixed to said temperature-varying system (fig. 5, 28); and temperature control means for controlling temperature of said temperature-varying system on the basis of the temperature detected by said first temperature detection means, thereby maintaining said sample at a predetermined temperature ([0014], lines 8-17).

Since Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the temperature-varying system of Shigeo et al. in the device of Tomimatasu et al. so that the temperature of the sample is continuously monitored and regulated to the predetermined temperature.

In regards to claim 8, Tomimatasu et al. teach a sample processing apparatus, wherein an ion beam can be irradiated on a lateral surface of the sample held (col. 10, lines 41-50, note figure 1).

Tomimatasu et al. differ from the claimed invention by not disclosing surface of the sample held on said temperature-varying system.

Shigeo et al. teach the surface of the sample held on said temperature-varying system ([0004], lines 1-5).

Since Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the sample held on said temperature-varying system of Shigeo et al. in the device of Tomimatasu et al. because it would put the sample in close proximity of the temperature-varying system of Shigeo, which would allow the temperature to be readily controlled to fix the sample at the pre-determined temperature.

In regards to claim 11, Tomimatasu et al. teach wherein said emitted signal is a secondary electron (col. 11, lines 26-34).

In regards to claim 12, Tomimatasu et al. teach in figure 1 wherein said detection means includes a first detector for detecting secondary electrons (col. 11, lines 26-34).

In the embodiment illustrated in figure 1, Tomimatasu et al. differ from the claimed invention by not disclosing a second detector for detecting secondary ions.

In another embodiment illustrated in figure 19, Tomimatasu et al. teach a second detector for detecting secondary ions (col. 23, lines 52-55).

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Since both embodiments disclose a sample processing apparatus, it would be obvious to one of ordinary skill in the art to combine the second detector for detecting secondary ions of Tomimatasu et al.'s second embodiment with the first embodiment so that both secondary electrons and ions are detected to form a more descriptive analysis of the sample.

In regards to claim 13, Tomimatasu et al. teach a sample processing method (col. 10, lines 41-46) comprising the steps of: sectioning or processing the sample by irradiating a predetermined portion of the sample with an ion beam from at least two angular directions relative to a surface of the sample (col. 10, lines 26-50); and connection said probe to a part of said sectioned sample (col. 10, lines 54-59).

Tomimatasu et al. differ from the claimed invention by not disclosing controlling a temperature of a sample.

Shigeo et al. teach controlling a temperature of a sample ([0014], lines 15-17).

Since both Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the controlling the temperature of a sample of Shigeo et al. in the device of Tomimatasu et al. because the temperature control means provides an effective means to control the temperature of the sample, while effectively using the coolant.

The combined invention of Tomimatasu et al. and Shigeo et al. differ from the claimed invention by not disclosing controlling a temperature of a probe.

Hironori teaches controlling a temperature (fig. 1, 45) of a probe (fig. 1, 20).

Since both Hironori and the combined invention of Tomimatasu et al. and Shigeo et al. teach a probe for observing a sample, it would be obvious to one of ordinary skill in the art to combine the controlling a temperature of a probe of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

The combined invention of Tomimatasu et al., Shigeo et al. and Hironori differ from the claimed invention by not disclosing controlling temperature of a sample plate.

Toshihiro et al. teach controlling a temperature of said sample plate ([0012], lines 1-6).

Since both Toshihiro et al. and the combined invention of Tomimatasu et al., Shigeo et al. and Hironori teach a sample for observing and temperature control means, it would be obvious to one of ordinary skill in the art to combine controlling a temperature of said sample plate of Hironori in the device of Tomimatasu et al. because it provides better temperature control of the sample through plate temperature regulation.

In regards to claim 14, Tomimatasu et al. teach a sample evaluating method (col. 10, lines 41-46) comprising the steps of: sectioning or processing the sample by irradiating a predetermined portion of the sample with an ion beam from at least two angular directions relative to a surface of the sample (col. 10, lines 26-50); connecting said probe to a part of said sectioned sample; isolating said sectioned sample to which said probe has been attached (col. 11, lines 4-25); attaching the isolated sample to said sample table using the probe (col. 10, lines 54-59, note figure 1); cutting off the probe

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(col. 18, lines 35-37); and irradiating the sample attached to said sample table with an evaluation beam for evaluation to obtain from an emitted signal an image of a cross-sectioned face of the sample generated by the sectioning or processing step (col. 11, lines 39-57).

Tomimatasu et al. differ from the claimed invention by not disclosing controlling a temperature of a sample.

Shigeo et al. teach controlling a temperature of a sample ([0014], lines 15-17).

Since both Shigeo et al. and Tomimatasu et al. teach a sample for observing, it would be obvious to one of ordinary skill in the art to combine the controlling the temperature of a sample of Shigeo et al. in the device of Tomimatasu et al. because the temperature control means provides an effective means to control the temperature of the sample, while effectively using the coolant.

The combined invention of Tomimatasu et al. and Shigeo et al. differ from the claimed invention by not disclosing controlling a temperature of a probe.

Hironori teaches controlling a temperature (fig. 1, 45) of a probe (fig. 1, 20).

Since both Hironori and the combined invention of Tomimatasu et al. and Shigeo et al. teach a probe for observing a sample, it would be obvious to one of ordinary skill in the art to combine the controlling a temperature of a probe of Hironori in the device of Tomimatasu et al. because temperature control decreases the adverse effects caused by temperature drift.

The combined invention of Tomimatasu et al., Shigeo et al. and Hironori differ from the claimed invention by not disclosing controlling temperature of a sample plate.

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Toshihiro et al. teach controlling a temperature of said sample plate ([0012], lines 1-6).

Since both Toshihiro et al. and the combined invention of Tomimatasu et al., Shigeo et al. and Hironori teach a sample for observing and temperature control means, it would be obvious to one of ordinary skill in the art to combine controlling a temperature of said sample plate of Hironori in the device of Tomimatasu et al. because it provides better temperature control of the sample through plate temperature regulation.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomimatasu et al. (U.S. patent no. 6,538,254), Shigeo et al. (JP pub. no. 09-306405), Hironori (JP pub. no. 2004-286696) and Toshihiro et al. (JP pub. no. 05-028946) as applied to claim 7 above, and further in view of Miller et al. (U.S. PGpub 2004/0173457).

In regards to claim 9, the combined invention of Tomimatasu et al. and Shigeo et al. differ from the claimed invention by not disclosing wherein said temperature control means further includes second temperature detection means for directly detecting the temperature of the sample; and display means for displaying the temperature detected by said second temperature detection means.

Miller et al. teach wherein said temperature control means (fig. 5) further includes second temperature detection means (fig. 5, 78) for directly detecting the temperature of the sample ([0032], lines 5-9); and display means for displaying the temperature detected by said second temperature detection means ([0028], lines 9-14, reporting the

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measurements of the temperature to the control software is a means of displaying the temperature to the computer to make analysis and adjustments).

Since both Miller et al. and the combined invention of Tomimatasu et al. and Shigeo et al. teach a means for temperature control, it would be obvious to one of ordinary skill in the art to use the second temperature detection means of Miller et al. in the combined device of Tomimatasu et al. and Shigeo et al. because it would give a more precise measurement of the temperature.

In regards to claim 10, the combined invention of Tomimatasu et al. and Shigeo et al. differ from the claimed invention by not disclosing wherein said temperature control means executes temperature control in said temperature-varying system on the basis of the temperatures detected by said first and second temperature detection means.

Miller et al. teach wherein said temperature control means (fig. 5, 72) executes temperature control in said temperature-varying system on the basis of the temperatures detected by said first and second temperature detection means ([0032], lines 5-8 and [0028], lines 9-22 (computer function that is "described above"), note: the computer makes adjustments to temperature based on feedback from multiple detection means).

Since both Miller et al. and the combined invention of Tomimatasu et al. and Shigeo et al. teach a means for temperature control, it would be obvious to one of ordinary skill in the art to use the temperature control execution of Miller et al. in the combined device of Tomimatasu et al. and Shigeo et al. because adjustments made to

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the temperature near the sample are better made knowing the affects of the temperature of the sample.

Applicant cannot rely upon the foreign priority papers to overcome this rejection (claims 1, 3-8, 11-15) because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Logie whose telephone number is 571-270-1616. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on 571-272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ml

Michael Logie

5-14-2007

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LISA CAPUTO
PRIMARY PATENT EXAMINER